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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/347,182	07/02/1999	STEVE J. SHATTIL		3526

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EXAMINER	
LY, NGHI H	

ART UNIT	PAPER NUMBER
2686	10

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/347,182	SHATTIL, STEVE J.	
	Examiner	Art Unit	
	Nghi H. Ly	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/16/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33 and 35-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33 and 35-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action (dated 07/18/2003) is persuasive and, therefore, the finality of that action is withdrawn.

Election/Restrictions

2. Applicant's election of group I (consisting of claims 1-33, 35-39) in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 9-33 and 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agee (US 6,128,276) in view of Wallmeier (US 6,553,033).

Regarding claims 1, 12-15, 20, 23, 31, 35 and 38, Agee teaches a method for spatial demultiplexing interfering signals (see abstract) comprising the steps of transforming a discreet-time input signal into a plurality of spectral components (see fig.12 box 330), computing a set of weights for each of a plurality of channels with respect to channel fading (see fig.7b box 191 and column 12, lines 54-58), applying the weights to the spectral components (also see fig.7b box 191), and combining the weighted spectral components to cancel co-channel interference (see column 14 lines 64-66 and fig.12 number 332) and combining of the weighted spectral components to cancel co-channel interference (see column 14, line 58 to column 15, line 5, also see fig.12, demultiplexer 330 and weights in the in the demodulator 332, also see column 17, lines 54-56).

Agee does not specifically disclose providing for multi-stage combining of the weighted spectral components.

Wallmeier teaches providing for multi-stage combining of the weighted spectral components (fig.2, see "demultiplexer", buffer P1-Pn and the weight WFQ, also see column 3, lines 4-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Wallmeier into the system of Agee in order to prevents a loss of ATM cells when processing ATM cells processed in accordance with the weighted fair queueing scheduling process (see Wallmeier, abstract).

Regarding claim 2, Agee further teaches the input signal is obtained by sampling at least one spread-spectrum signal (see column 11, lines 16-19).

Regarding claim 3, Agee further teaches the input signal is obtained by sampling at least one received multicarrier signal (see column 26, lines 40-44).

Regarding claim 4, Agee further teaches the input signal is obtained by sampling at least one code division multiple access signal (see column 27, lines 30-34).

Regarding claims 5 and 7, Agee further teaches the input signal is obtained by sampling at least one discreet-time signal (see column 13, lines 44-61).

Regarding claim 6, Agee further teaches the input signal is obtained by sampling at least one continuous-time signal (see column 13, lines 44-61).

Regarding claim 9, Agee further teaches the discreet-time input signal is transformed into spectral components using an N-point discreet Fourier transform (see column 3, lines 25-27).

Regarding claims 10 and 11, Agee further teaches the step of transforming the discreet-time input signal into the plurality of spectral components includes a spectral filtering step in which only non-redundant spectral components are passed (see column 27, lines 43-47).

Regarding claims 16 and 37, Agee further teaches the discreet-time input signal is received from a single antenna element (see fig.12 one antenna 326).

Regarding claim 17, Agee further teaches the discreet-time input signal is received from an antenna array (see fig.9 antennas 262 and 263).

Regarding claim 18, Agee further teaches the discreet-time input signal is a multicarrier signal wherein each carrier of the multicarrier signal has a different spreading code and the step of transforming the discreet-time input signal into the plurality of spectral components includes a step of decoding the multicarrier signal (see fig.9 box 276).

Regarding claim 19, Agee further teaches the discreet-time input signal is derived from at least two receive signals transmitted by at least one transmitter wherein the receive signals are transmitted with different beam patterns (see column 36, lines 26-29).

Regarding claims 21 and 22, the combination of Agee and Wallmeier further teaches the step of transforming the discreet input signals includes a step of separating a plurality of interfering information signals modulated on each of the spectral components (see Agee, column 14, line 58 to column 15, line 5, also see fig.12, demultiplexer 330 and weights in the in the demodulator 332, also see column 17, lines 54-56) and passing the information signals to the step of providing for multi-stage demultiplexing of the interfering signals (see Wallmeier, fig.2, "demultiplexer", buffer P1-Pn and the weight WFQ, also see column 3, lines 4-45).

Regarding claims 24 and 25, Agee further teaches each of the transmit signals has a different amplitude-versus-frequency profile (see column 17, lines 21-26).

Regarding claims 26, 27, 28 and 29, Agee further teaches at least two of the transmitters are co-located (see fig.1 number 18).

Regarding claims 30, Agee further teaches the transmit signals have constant modulus (see column 22, lines 18-25).

Regarding claims 32, Agee further teaches the diversity components are polarization-diversity components (see column 1, lines 57-59).

Regarding claims 33, Agee further teaches diversity components are frequency-diversity components (see column 36, lines 61-65).

Regarding claims 36, Agee further teaches the diversity receiver includes a filter bank (see fig.7b box 182).

Regarding claims 39, the combination of Agee and Wallmeier further teaches the multistage spatial demultiplexer (see Wallmeier, fig.2, "demultiplexer", buffer P1-Pn and the weight WFQ, also see column 3, lines 4-45) is adapted to separate the received signals by comparing the received signals to a constellation of points (see Wallmeier, column 2, lines 36-40 and see column 4, lines 59-63).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agee (US 6,128,276) in view of in view of Wallmeier (US 6,553,033) and further in view of Raleigh et al (US 5,809,422).

Regarding claim 8, the combination Agee and Wallmeier teaches the discreet-time input signal is produced by sampling at least one received signal at a uniform sampling rate. The combination Agee and Wallmeier does not specifically disclose the received signal passes through an anti-aliasing filter before being sampled.

Raleigh teaches the received signal passes through an anti-aliasing filter before being sampled (see column 10, line 56 to column 11, line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Raleigh into the system of Agee and Wallmeier in order to reduce the exemplary Msps rate of the baseband output of the multiplier (see Raleigh column 10, line 67 to column 11, line 1).

Response to Arguments

6. Applicant's arguments with respect to claims 1-33 and 35-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (703) 605-5164. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (703) 305-4379. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Nghi H. Ly

November 25, 2003

CHARLES APPIAH
PRIMARY EXAMINER